

Nia

Wǒ de Kē Xué Yán Jiū Tí Mù Shì Huà Xué Fǎn Yīng
我的科学研究题目是化学反应

The Big Blow Up

Dà Dì Chuī Qì Lái
大大地吹起气来

Question

Wǒ de Kē Xué Yán Jiū Wèn Tí Shì
我的科学研究问题是

What will happen in a bottle when baking soda and vinegar are mixed together and it's covered with a balloon?

Rú Guǒ Zài Yī Gè Píng Zǐ Lǐ Bǎ Xiǎo Sū Dǎ Hé Cù Hùn Hé Zài Yī
如果在一个瓶子里，把小苏打和醋混合在一起，
Qí Shàng Miàn Fù Gài Zhe Yī Gè Qì Qiú Huì Fā Shēng Shí Me
起，上面覆盖着一个气球，会发生什么？

Hypothesis

Wǒ de Jiǎ Shè Shì
我的假设是

When vinegar and baking soda are mixed together, it will cause a quick chemical reaction.

Dāng Cù Hé Xiǎo Sū Dǎ Hùn Hé Zài Yī Qǐ Shí Huì Yīn Qǐ Kuài Sù de
当醋和小苏打混合在一起时，会引起快速的
Huà Xué Fǎn Yīng
化学反应。

Procedure

1. Place all your materials on a table
2. Measure $\frac{1}{2}$ cup of vinegar and pour into the empty bottle.
3. Measure 2 Tablespoons of baking soda and pour into empty balloon.
4. Place the balloon on top of the bottle.
5. Hold the balloon upright so that the contents mix together
6. Hold the bottle as the balloon fills up to prevent it from falling down.
7. Then watch as the big blow up occurs.
8. Clean up and wash your hands

9. The end

Bù Zhòu 步骤

Yī Jiāng Suǒ Yǒu de Cái Liào Fàng Zài Yī Zhāng Zhuō Zi Shàng
一将所有的材料放在一张桌子上。

Èr Liáng Bàn Bēi Cù, Dǎo Rù Kōng Píng Zi Lǐ
二量半杯醋，倒入空瓶子里。

Sān Liáng Liǎng Tāng Chí de Xiǎo Sū Dǎ, Dǎo Rù Kōng Dì Qì Qiú Nèi
三量两汤匙的小苏打，倒入空的气球内。

Sì Bǎ Qì Qiú Fàng Zài Píng Zi Shàng
四把气球放在瓶子上。

Wǔ Bǎ Qì Qiú Bǎo Chí Zhí Lì, Ràng Lǐ Miàn Dì Wù Zhì Hùn Hé Zài Yī Qì
五把气球保持直立，让里面的物质混合在一起。

Liù Wò Zhù Píng Zi, Dāng Qì Qiú Tián Mǎn Qì Shí, Yǐ Fáng Zhǐ Tā Cóng
Zhuō Zi Shàng Dǎo Xià
六握住瓶子，当气球填满气时，以防止它从桌子上倒下。

Qī Rán Hòu Guān Chá Dà de Qì Chuī Qǐ Lái
七然后观察大的气吹起来。

Bā Qīng Lǐ Hé Xǐ Shǒu
八清理和洗手

Jiǔ Jié Shù
九结束。

Fǎn Yīng 反应

The reaction occurred because vinegar is an acid and baking soda is a base and together it causes two reactions. Carbonic acid formed but it broke down into carbon dioxide (that's the air we breathe out) and water. The balloon filled up because carbon dioxide is heavier than air and as it escapes it fills up the empty space in the balloon.

Huà Xué Fǎn Yīng de Fā Shēng Shì Yīn Wéi Cù Shì Suān de, Xiǎo Sū Dǎ Shì
化学反应的发生是因为醋是酸的，小苏打是
Méi Tǐ, Lián Tóng Tā Huì Dǎo Zhì Liǎng Zhǒng Fǎn Yīng. Tàn Suān Xíng Chéng,
媒体，连同它会导致两种反应。碳酸形成，
Dàn Tā Dǎ Pò Le, Fēn Jiě Chéng Èr Yǎng Huà Tàn (Zhè Shì Wǒ Men Hū
但它打破了，分解成二氧化碳（这是我们呼
Chū de Kōng Qì) Hé Shuǐ. Qì Qiú Chōng Mǎn Le Qì, Yīn Wéi Èr Yǎng
出的空气) 和水。气球充满了气，因为二氧
Huà Tàn Bǐ Kōng Qì Zhòng, Yīn Wéi Tā Yì Chū Qù Tián Bǔ Qì Qiú Kōng Bái
化碳比空气重，因为它逸出去填补气球空白
de Kōng Jiān.
的空间。

Conclusion

Jié Lùn 结论

As soon as the baking soda mixed with the vinegar in the bottle, bubbles started to form and it made a funny sound. Then the balloon started to inflate. It lasted about a minute and a half. It was really, really exciting to see.

Zhī Yào Zài Píng Zǐ Lǐ de Cù Yǔ Xiǎo Sū Dǎ Hùn Hé, Qì Pào Kāi Shǐ
只要在瓶子里的醋与小苏打混合，气泡开始
Xíng Chéng, Huán Huì Fā Chū Yǒu Qù de Shēng Yīn. Rán Hòu, Qì Qiú Kāi
形成，还会发出有趣的声音。然后，气球开

Shǐ Pēng Zhàng Tā Chí Xù Le Dà Yuē Yī Fēn Bàn Zhōng Zhè Zhēn Shì Hěn
始膨胀。它持续了大约一分半钟。这真是很
Líng Rén Xīng Fèn
令人兴奋。